

Application Serial No. 10/615,041
Reply to Office Action of August 20, 2008

PATENT
Docket: CU-5982

REMARKS

In the Office Action, dated August 20, 2008, the Examiner states that Claims 1, 3, 5-8 and 10-29 are pending and rejected. By the present Amendment, Applicant amends the claims.

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as indefinite because the Office Action considers that the terms "coumalin" and "ketocoumalin" recited therein should read "coumarin" and "ketocoumarin." Applicant has cancelled Claim 26 rendering rejection of this claim moot. As such, Applicant respectfully requests withdrawal of the rejection of Claim 26 under 35 U.S.C. 112, second paragraph.

Claims 25-26 and 28-29 are rejected under 35 U.S.C. 102(b) as anticipated by Mishima et al. (US 5,187,770). Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. (JP 05-273899). Claims 1, 5, 7, 8, 10-12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwagi et al. (JP 03-123715). Claims 1, 5-8 and 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otaki et al. (US 7,323,275). Claims 1, 5-8 and 10-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otaki et al. in view of Sugawara et al. Claims 1, 5-8 and 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al. (US 5,869,210) in view of Otaki et al. or Kashiwagi et al. (JP 03-123715). Claims 18-29 are rejected under 35 U.S.C. 103(a) as unpatentable over Ohkuma et al. in view of Sugawara et al. or over Maeda et al. (JP 06-019040) in view of Sugawara et al. Applicant respectfully disagrees with and traverses these rejections.

At the outset, Applicant indicates that the features of Claim 14 have been added to Claim 1. Moreover, new Claims 30 and 31 have been added, support for which can be found in the priority application JP 2002-204797 at page 34, line 8, page 35, lines 13-34, Examples 8, 9 and 10 in the specification and at page 37, lines 17-18 and Examples 6, 7, 8, 9, 10, 13 and 14 in the specification, respectively.

Applicant respectfully asserts that the composition of Kashiwagi et al. is a coating composition for denture and denture base, and the purpose is to provide a coating film having long-term plaque resistance, excellent lubricating properties and also excellent wear resistance. In Kashiwagi et al., HDEP (fluorinated epoxide) was used just as an example of reactive diluents. Fluorine-contained photoreactive

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compounds of other structures were also disclosed in Kashiwagi et al., however, they are completely different in function from the present invention which is used as a refractive index modulating component. Applicant respectfully asserts that it is not obvious to incorporate a sensitizing dye for improving the recording sensitivity of holograms in Kashiwagi's coating composition for denture and denture base.

Moreover, no fluorine-contained photoreactive compound is disclosed in connection with the composition of Ohkuma et al. As disclosed in Comparative Examples 1 and 2 in JP2002-204797, unlike the use of the fluorine-contained photoreactive compounds specified in the present invention, the use of nonfluorine-contained photoreactive compounds results in a considerably inferior refractive index modulation. That is, the use of the fluorine-contained photoreactive compounds specified in the present invention provides superior sensitivity and refractive index modulating effect (see paragraphs [0028]-[0032] in JP2002-204797). Such advantageous effects, however, cannot be anticipated from Ohkuma et al.

Conventionally, fluorine-contained photoreactive compounds are still poor in compatibility with other blend components. Thus, the range from which other blend components can be selected is limited, and it is difficult to make the blend ratio of the fluorine-contained compound high. For this reason, even when using a fluorine-contained compound, the Δn has been hitherto unable to be sufficiently improved (see paragraph [0010], Comparative Examples 3 and 4 in JP2002-204797). Applicant respectfully asserts that it is not clear from Kashiwagi et al. what fluorine-contained compound will provide a low refractive index when blended, and whether or not it is suitable for a low refractive index type refractive index modulating component, due to having superior properties such as superior compatibility with other blend components (e.g. a binder resin), polymerization reactivity and diffusing/moving ability at the time of hologram-exposure. Applicant respectfully asserts that one of ordinary skill in the art would necessarily need to engage in a large amount of undue experimentation in an attempt to answer the foregoing questions.

Accordingly, Applicant respectfully asserts that it is not obvious to replace the component of Ohkuma et al. with the fluorine-contained photoreactive compound of Kashiwagi et al., which has a completely different purpose of use from that of Ohkuma's composition.

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Furthermore, after reviewing the cited prior art, Applicant respectfully asserts that one of ordinary skill in the art could in no way predict that the fluorine-contained photoreactive compounds of the present invention would have a very low refractive index because of their specific structures or that they are suitable for a low refractive index type refractive index modulating component because of their superior properties such as compatibility with other blend components (e.g. a binder resin), polymerization reactivity and diffusing/moving ability at the time of hologram-exposure, so that the incorporation of the compounds, as a refractive index modulating component, in a volume hologram recording photosensitive composition provides superior sensitivity and refractive index modulating effect.

With respect to the acrylate group series, currently amended claim 18 is disclosed in Example 12 in the priority application: JP2002-204787. Please find an Affidavit under 37 CFR 1.132 filed herewith, explaining that Hiroyuki Otaki and Toshio Yoshihara, inventors of the present application, were the sole inventors of US 7,323,275, Otaki et al., and thus this reference is not "by another." As such, Applicant respectfully asserts that Otaki et al. should be excluded from the list of the cited references.

Moreover, Applicant respectfully asserts that the use of metal fine particles is not disclosed in the following cited references: Sugawara et al., Ohkuma et al. and Maeda et al. The organometallic compound disclosed in Maeda is not metal "fine particles."

Sugawara's invention relates to the hologram formation in which an interference pattern is exposed in a recording carrier, which is composed of a binder polymer, monomer and photopolymerization initiator, by laser, and the pattern is immersed in a developing solution containing a monomer, which is different from that in the recording carrier, to extract the monomer in the recording carrier according to the interference pattern, followed by substituting the extracted monomer with the monomer in the developing solution, thereby forming a hologram. In Sugawara et al., a fluorine-contained photoreactive compound is mainly contained in a developing solution and suitably used as a guest monomer, which is to be substituted later for a host monomer. Even in Examples in Sugawara et al. (Examples 2 and 5), the fluorine-contained photoreactive compound represented by the formula (1) is also used as a guest monomer only. That is, in Sugawara, there is actually no

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consideration of the combination of the fluorine-contained photoreactive compound represented by the formula (1) with a binder resin. Therefore, even for those skilled in the art, it is not obvious from Sugawara et al. that when the fluorine-contained photoreactive compound represented by the formula (1) is combined with a binder resin, superior compatibility, polymerization reactivity and diffusing/moving ability at the time of hologram-exposure are obtained.

In view of the foregoing, Applicant respectfully asserts that, even for those skilled in the art, it is not obvious that the combination of the fluorine-contained photoreactive compound represented by the formula (1), a binder resin and the metal fine particles results in superior sensitivity and refractive index modulating effect.

With respect to currently amended Claim 32, Applicant respectfully asserts that it can be found in the priority application: JP2002-204797 (see claims 1, 2 and 6, page 37, line 17-18, and Examples 2, 3, 4, 5, 11 and 12 in the specification.) Once again, please find an Affidavit under 37 CFR 1.132 filed herewith, explaining that Hiroyuki Otaki and Toshio Yoshihara, inventors of the present application, were the sole inventors of US 7,323,275, Otaki et al., and thus this reference is not "by another." As such, Applicant respectfully asserts that Otaki et al. should be excluded from the list of the cited references.

Moreover, Applicant respectfully asserts that no "3-ethyl-5-[(3-ethyl-2(3H)-benzothiazolilidene)ethylidene]-2-thioxo-4-oxazolidinone" is disclosed in the following cited references: Mishima et al., Sugawara et al., Ohkuma et al. and Maeda et al.

Accordingly, Applicant respectfully asserts that after reviewing any of the cited references, it would still not be obvious to one of ordinary skill in the art that the specific fluorine-contained photoreactive compounds of the present invention are used in combination with 3-ethyl-5-[(3-ethyl-2(3H)-benzothiazolilidene)ethylidene]-2-thioxo-4-oxazolidinone to increase the sensitivity at the time of hologram-exposure and the refractive index modulation.

In light of the foregoing response, Applicant respectfully asserts that the currently amended claims are neither obvious over, nor anticipated by, the cited prior art. As such, Applicant respectfully requests withdrawal of the foregoing rejections under 35 U.S.C. 102 and 103.

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Claims 1, 5-8 and 10-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-23 of US 7,323,275. Filed herewith, please find a terminal disclaimer to limit the maximum allowable patent term for a patent granted from the present application to the maximum allowable patent term for US 7,323,275.

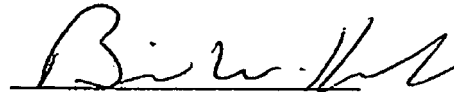
Claims 1-5 and 7-29 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-33 of US 7,323,275 in view of JP 05-273899. Filed herewith, please find a terminal disclaimer to limit the maximum allowable patent term for a patent granted from the present application to the maximum allowable patent term for US 7,323,275.

In view of the foregoing, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

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Date



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